OPERATING SUMMARY

FRANKFORD

1968

● water pollution control plant

● water supply system

ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

Water management in Ontario

Ontario
Water Resources
Commission

135 St. Clair Ave. W.
Toronto 7, Ontario
Tel. 365-5115

We are pleased to present you with the Operating Summary for the water pollution control and water treatment facilities operated for you during 1968.

Both the financial and technical information presented should be of assistance to your present and future planning in this important phase of municipal activity.

A new format has been devised to allow greater readability with equally detailed content. We trust that this will meet with your approval.

Our staff wish to express their appreciation for your co-operation throughout the year.

D. S. Caverly,
General Manager.

D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

FRANKFORD
water pollution control plant
and
water treatment plant

operated for

THE VILLAGE OF FRANKFORD

by the

ONTARIO WATER RESOURCES COMMISSION

1968 ANNUAL OPERATING SUMMARY

FOREWORD

● This operating summary outlines the project's technical capabilities and financial status in 1968. Such information mirrors past and present performance, but a major intention is to anticipate the future -- to solve problems before they occur.

The new format in which this year's data are presented is designed to offer a higher level of readability than in the past, without a corresponding decrease in compactness, accuracy and detail.

Although your Regional Operations Engineer carries the major responsibility for the contents of the report, those involved in its preparation are attached to several Commission sections and divisions. The statistics section of the Division of Plant Operations compiled the information for the graphs and charts. The draughting section of the Division of Sanitary Engineering drew the graphs. The Division of Finance provided all cost data.

Only the close co-operation of these departments allowed the publication of this summary.

CONTENTS

'68 REVIEW

SEWAGE SYSTEM

The total operating cost for the sewage system for 1968 was $6,802.96. This cost increased 12.9 percent from 1967, primarily owing to increases in payroll, chemical, and equipment expenses.

Accurate flow data for the plant are not available, due partly to the fact that flow measurement is by time totalizers on the raw sewage pumps. Also, recirculation of trickling filter effluent to the raw sewage wet well is practised during the months of April to December, and this recirculated flow cannot be measured accurately.

The average concentrations of BOD and suspended solids in the plant influent were 129 mg/l and 174 mg/l respectively. The average concentrations of BOD and suspended solids in the effluent were 29 mg/l and 20 mg/l. The average percent reduction was 78 percent for BOD and 89 percent for suspended solids.

No major problems were experienced with the Frankford Water Pollution Control plant in 1968. However, some basement flooding occurred on King Street.

In November 1968, a contract was let to M. Sullivan and Son Limited for the construction of extensions to the sanitary sewer system and to the water distribution system.

WATER SYSTEM

A total flow of 20.77 million gallons was recorded at the water pumping station. This excludes the water pumped during the months of September, October, and November, as the water meter was out of service during this time. The average daily flow for the metered period was 0.076 million gallons.

The total operating cost for the water system was $2,480.77 in 1968. The operating costs increased by 32.1 percent from 1967, primarily as a result of increases in payroll and taxes.

The water system ran well in 1968 and no major problems were experienced.

PROJECT COSTS

2-0009-57 (Sewage)

NET CAPITAL COST (Final)	$162,062.20
DEDUCT - Payments from Municipalities	4,899.45
Long Term Debt to OWRC	$157,162.75
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	$ 31,745.98
Net Operating	$ 6,802.96
Debt Retirement	3,172.00
Reserve	752.47
Interest Charged	8,823.63
TOTAL	$ 19,551.06

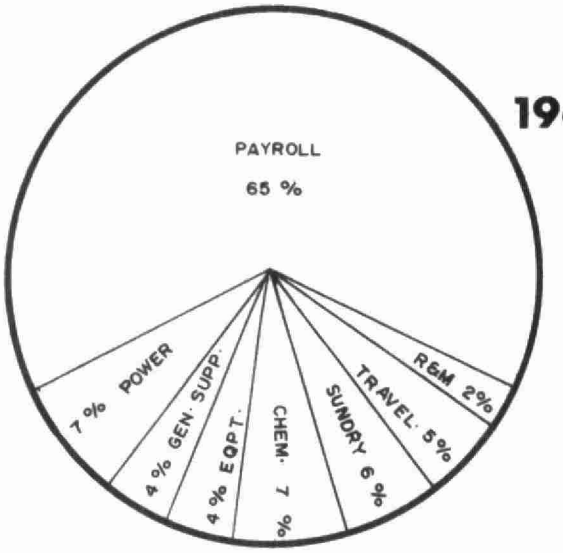
RESERVE ACCOUNT

Balance at January 1, 1968	$ 6,218.96
Deposited by Municipality	752.47
Interest Earned	382.41
	$ 7,353.84
Less Expenditures	46.00
Balance at December 31, 1968	$ 7,307.84

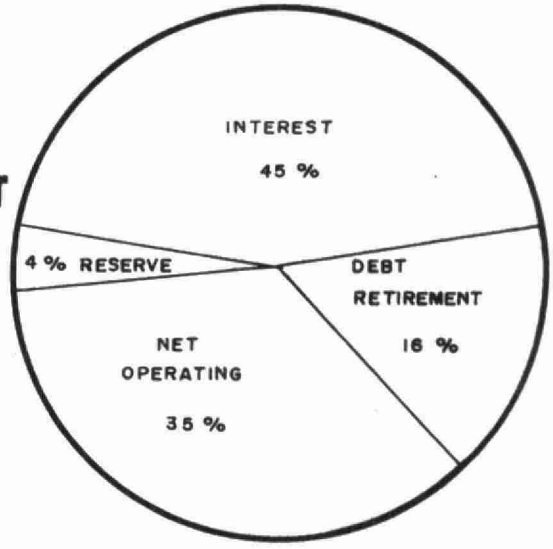
Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAY ROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY	WATER	TRAVEL
JAN	365.01	305.35	-	-	44.81	-	14.85	-	-	-	-	-
FEB	734.89	276.31	-	-	46.54	238.61	12.15	-	131.16	11.92	-	18.20
MAR	535.73	438.62	-	-	44.60	-	15.87	-	-	20.89	-	15.75
APRIL	526.01	281.15	45.39	-	44.60	-	65.00	57.14	-	10.55	-	22.18
MAY	413.80	290.83	45.39	-	35.38	-	-	-	4.52	12.76	-	24.92
JUNE	384.60	295.67	-	-	35.86	-	22.60	-	-	11.29	-	19.18
JULY	545.50	269.07	-	-	29.29	-	47.05	-	-	179.86	-	20.23
AUG	457.19	418.09	-	-	27.60	-	-	-	-	11.50	-	-
SEPT	421.18	302.95	-	-	29.13	-	32.59	-	-	17.38	-	39.13
OCT	615.63	317.44	-	-	29.80	-	-	226.85	-	11.50	-	30.04
NOV	701.12	288.41	-	-	35.73	238.61	21.38	-	-	79.05	-	37.94
DEC	1102.30	875.80	-	-	39.69	-	53.78	-	23.40	16.64	-	92.99
TOTAL	6802.96	4359.69	90.78	-	443.03	477.22	285.27	283.99	159.08	383.34		320.56

1968 OPERATING COSTS



TOTAL ANNUAL COST



Yearly Operating Costs

YEAR	MG TREATED (estimated)	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1965	70	$4,920.71	$ 70.00	6 cents
1966	56	5,615.77	100.00	7 cents
1967	60	6,027.80	100.00	6 cents
1968	64	6,802.96	106.00	10 cents

PROJECT COSTS

6-0002-57 (Water)

NET CAPITAL COST (Final) Long Term Debt to OWRC	$119,401.83
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	$ 23,573.53
Net Operating	$ 2,480.77
Debt Retirement	2,410.00
Reserve	492.50
Interest Charged	6,703.62
TOTAL	$ 12,086.89

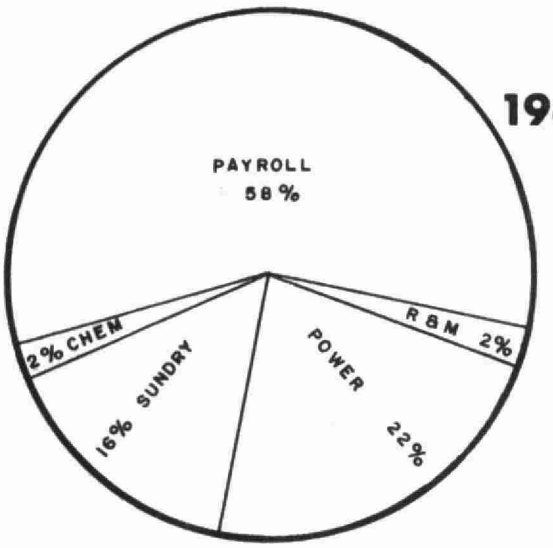
RESERVE ACCOUNT

Balance at January 1, 1968	$ 5,765.59
Deposited by Municipality	492.50
Interest Earned	351.83
	$ 6,609.92
Less Expenditures	-
Balance at December 31, 1968	$ 6,609.92

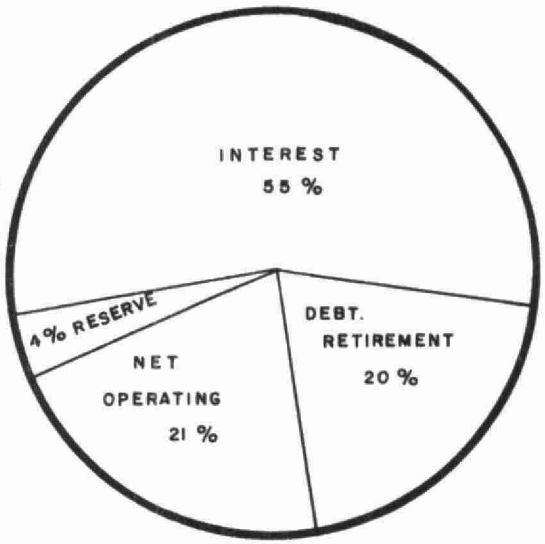
Monthly Operating Costs

MONTH	TOTAL	PAYROLL	CASUAL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY	TRAVEL
JAN	151.95	99.37			52.58	-	-		-	-	
FEB	146.59	89.69			56.90	-	-		-	-	
MAR	209.02	143.80			53.78	-	1.37		-	10.07	
APRIL	145.66	91.30			54.36	-	-		-	-	
MAY	138.31	94.53			43.78	-	-		-	-	
JUNE	139.59	96.14			43.45	-	-		-	-	
JULY	478.33	89.69			38.63	-	-		-	350.01	
AUG	176.36	134.53			41.83	-	-		-	-	
SEPT	156.26	100.99			41.65	-	-		13.62	-	
OCT	196.62	100.98			39.53	56.11	-		-	-	
NOV	204.49	93.72			37.28	-	-		46.53	26.96	
DEC	337.59	289.53			48.06	-	-		-	-	
TOTAL	2480.77	1424.27			551.83	56.11	1.37		60.15	387.04	

1968 OPERATING COSTS



TOTAL ANNUAL COST



Yearly Operating Costs

YEAR	M.G. TREATED	TOTAL COST	COST PER THOUSAND GALLONS
1965	30.495	$2,065.84	$ .07
1966	34.353	1,940.37	.06
1967	30.912	1,887.25	.06
1968	27.439	2,480.77	.09

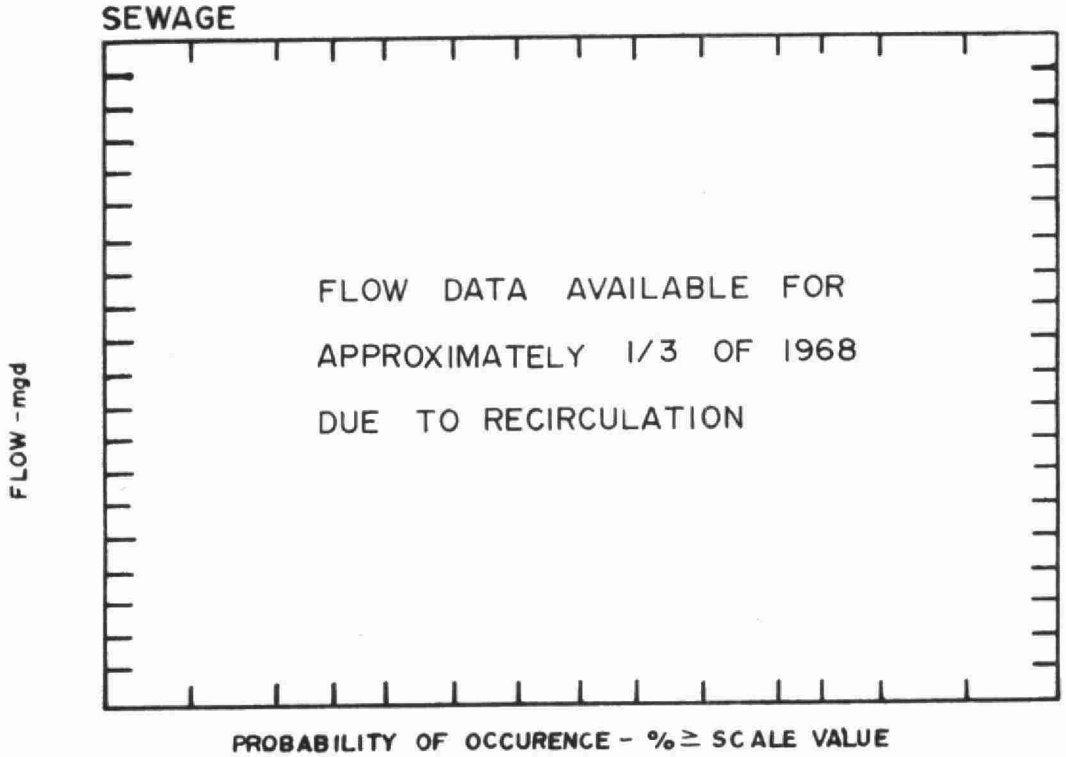
PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mg	AVERAGE DAILY FLOW mg	MAXIMUM DAILY FLOW mg	MINIMUM DAILY FLOW mg	CHLORINE USED lbs.	DOSAGE mg/l
JAN	4.464	0.144			161	3.6
FEB	5.605	0.193			155	2.8
MAR	6.952	0.224			163	2.3
APR	-	-			151	-
MAY	-	-			160	-
JUN	-	-			153	-
JUL	-	-			151	-
AUG	-	-			165	-
SEPT	-	-			138	-
OCT	-	-			152	-
NOV	-	-			163	-
DEC	-	-			175	-
TOTAL	-	-			1887	-
AVERAGE	-	0.187			157	-

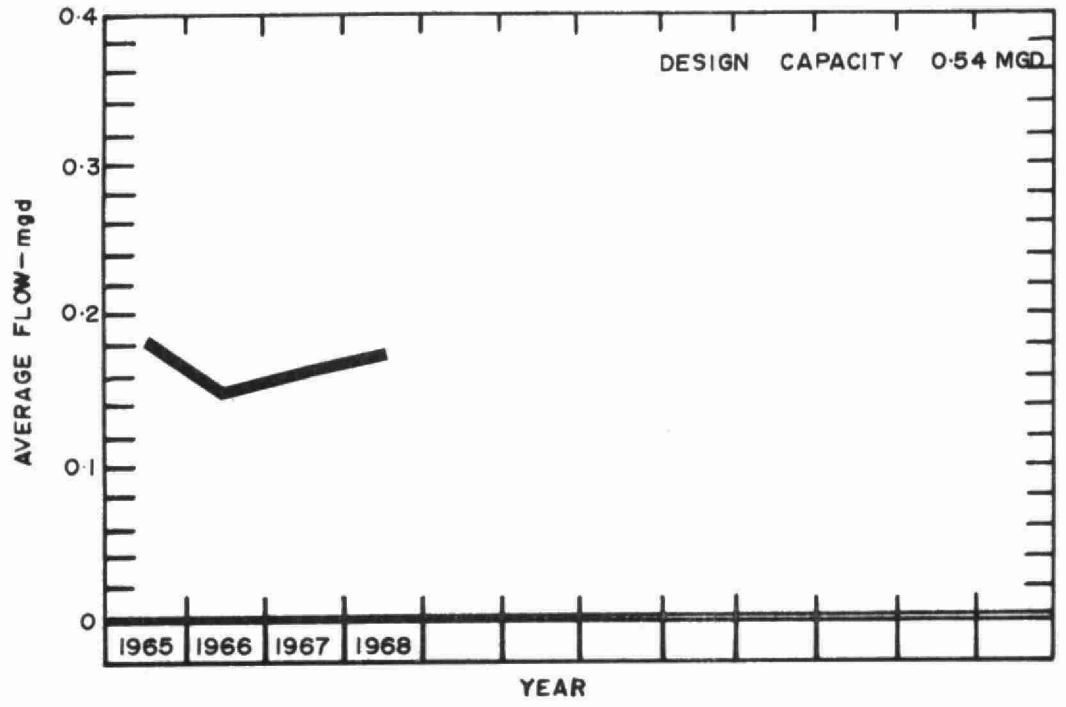
COMMENTS

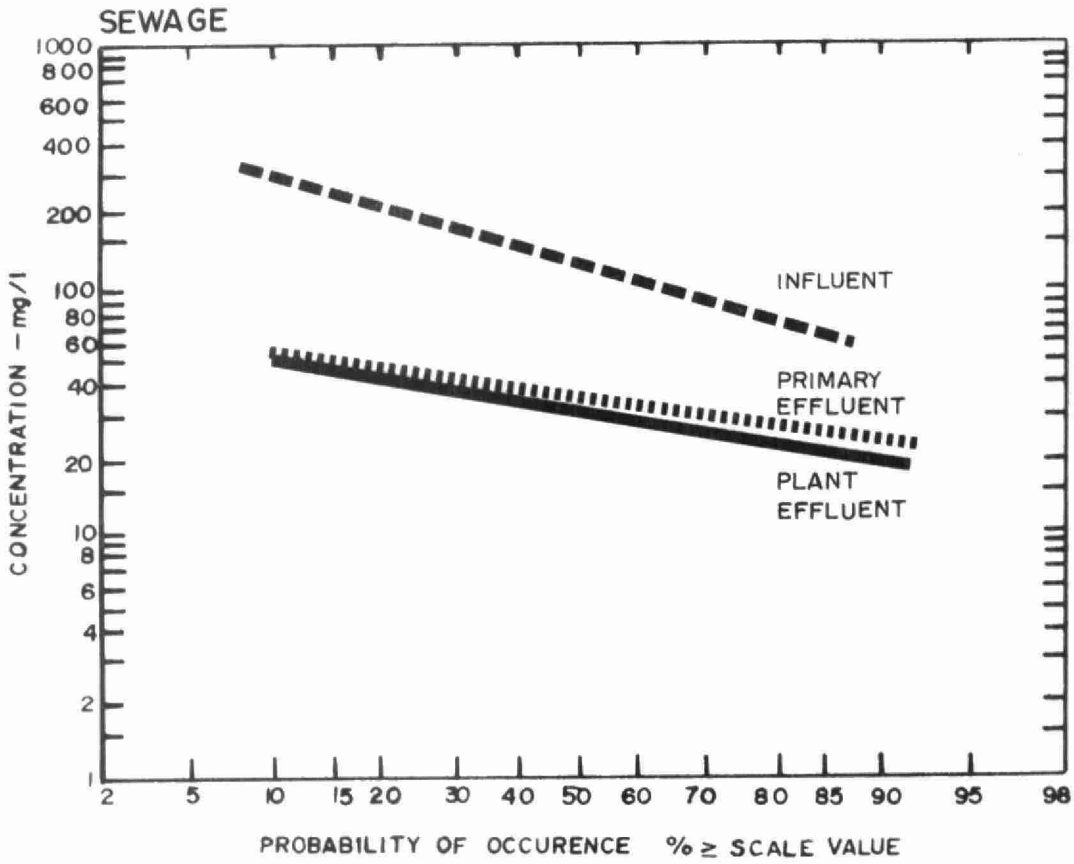
Accurate plant flows are not available due to reasons mentioned previously. Estimates (based on pump timer readings only) have, however, been included for the months during which recirculation of trickling filter effluent was not practised. These flow estimates have also been used for the calculation of chlorine dosage rates.

The plant effluent is chlorinated continuously for disinfection purposes. The effluent required 1887 pounds of chlorine to achieve the OWRC objective of 0.5 mg/l after a 15-minute detention time.

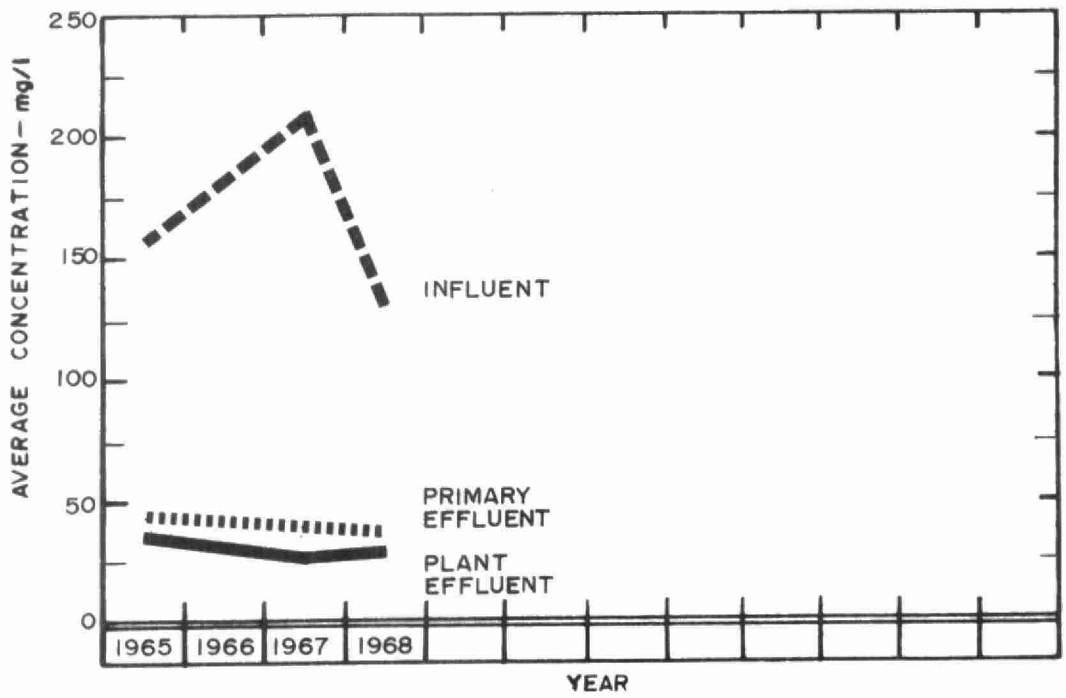

SEWAGE
FLOW DATA AVAILABLE FOR
APPROXIMATELY 1/3 OF 1968
DUE TO RECIRCULATION
FLOW - mgd
PROBABILITY OF OCCURENCE - % ≥ SCALE VALUE

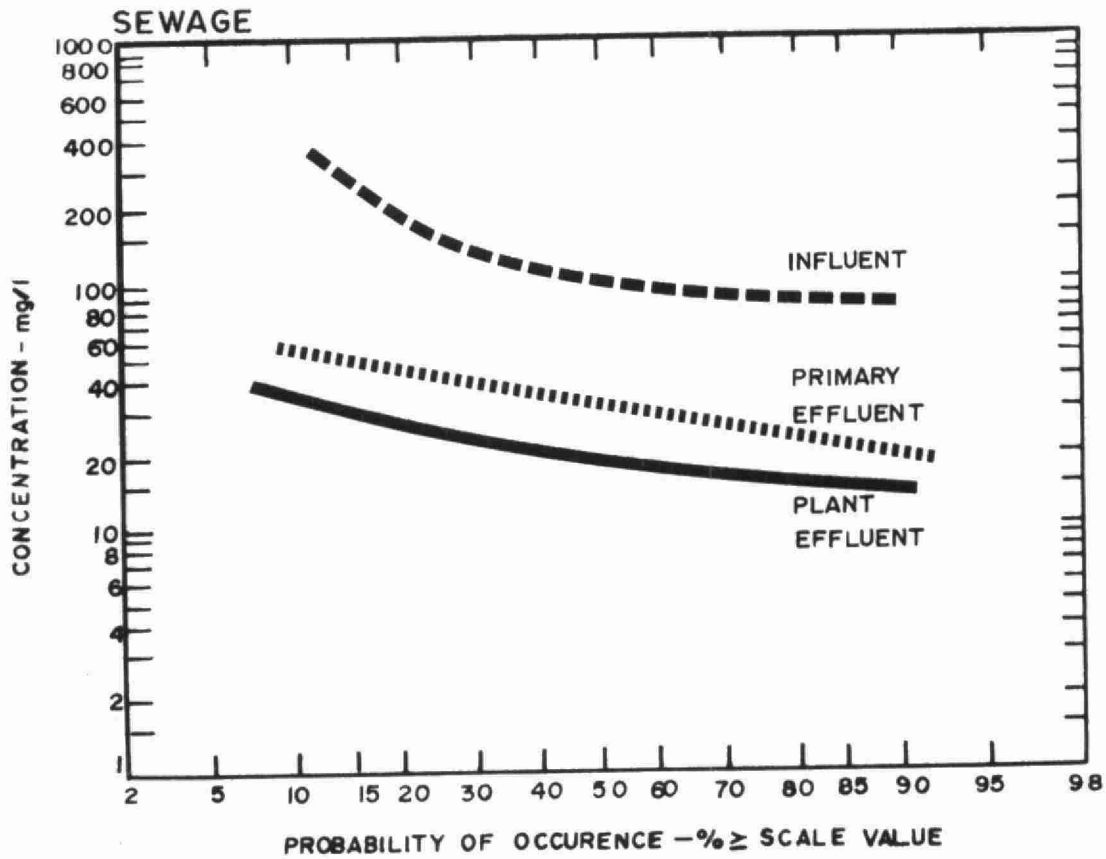
FLOWS


0·4
0·3
0·2
0·1
0
DESIGN CAPACITY 0·54 MGD
AVERAGE FLOW - mgd
1965
1966
1967
1968
YEAR

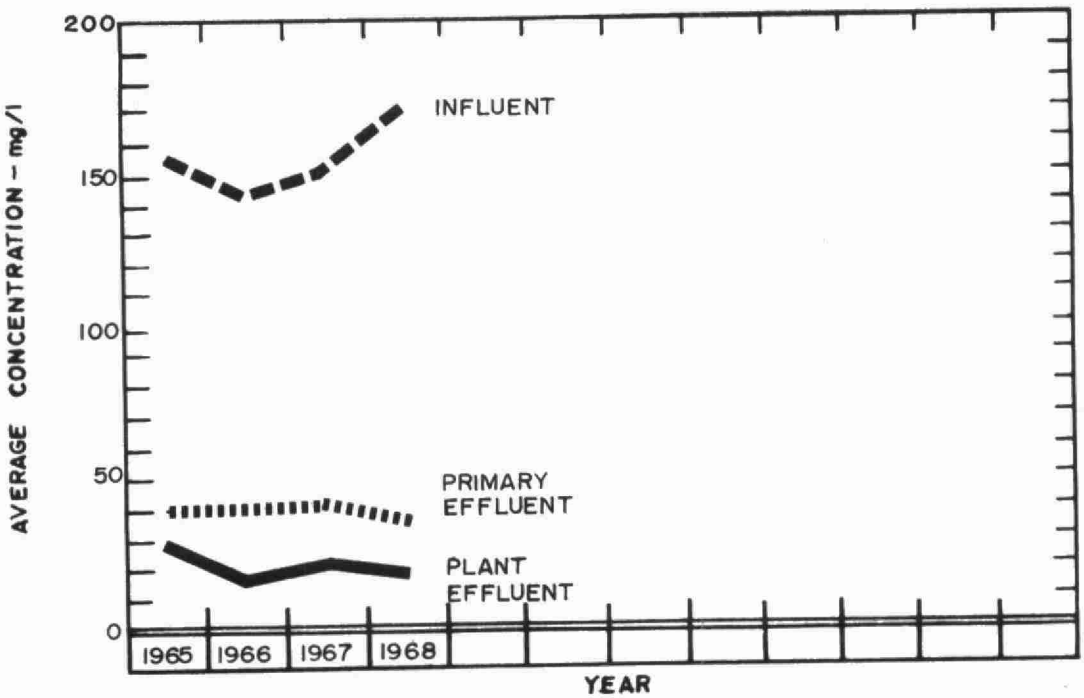


BIOCHEMICAL OXYGEN DEMAND





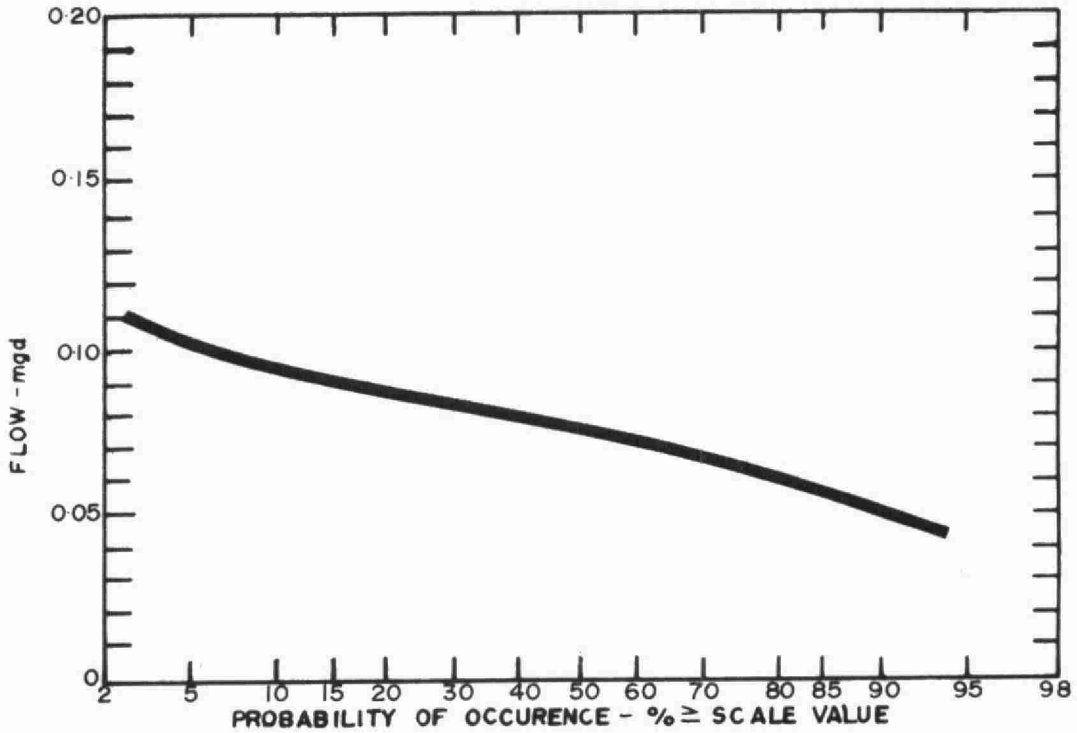
SUSPENDED SOLIDS



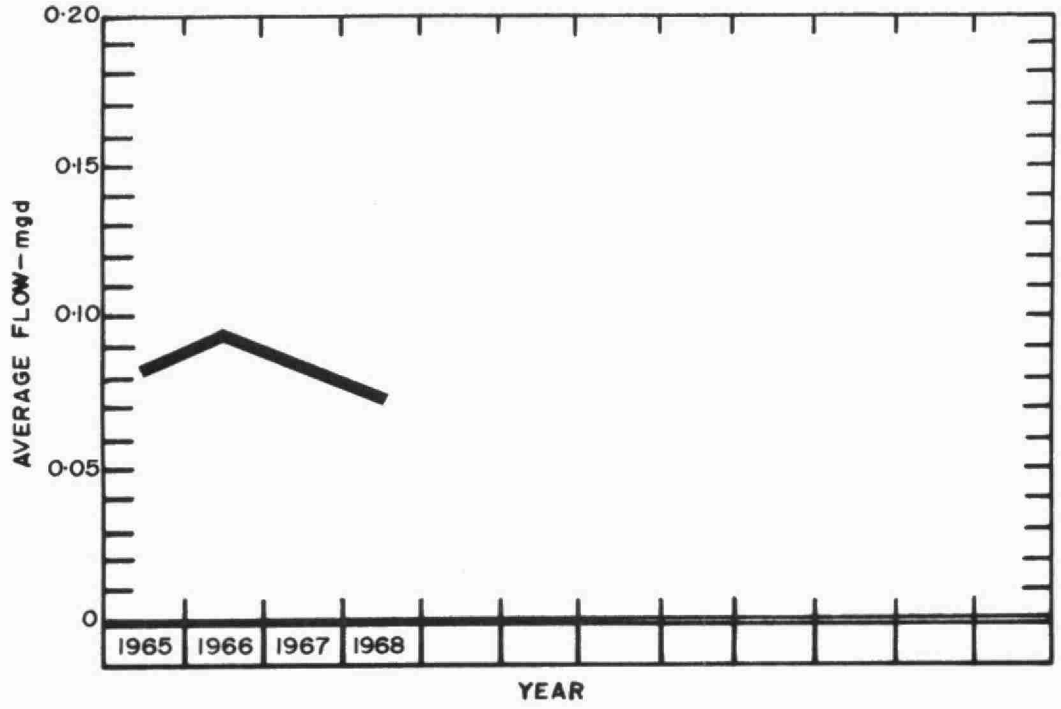
PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT
	INF CONC^N mg/l	EFF CONC^N mg/l	RED^N %	REMOVAL lb	INF CONC^N mg/l	EFF CONC^N mg/l	RED^N %	REMOVAL lb	REMOVAL ft^3
JAN	330	41	88	12.9	814	37	95	34.7	4
FEB	-	-	-	-	-	-	-	-	5
MAR	98	33	66	4.5	118	20	83	6.8	4
APR	78	15	81	-	87	13	85	-	4
MAY	104	21	80	-	117	13	89	-	5
JUN	90	24	73	-	117	13	89	-	4
JULY	56	22	61	-	80	22	72	-	4
AUG	200	31	84	-	181	15	92	-	5
SEPT	80	31	61	-	92	27	71	-	4
OCT	190	54	72	-	85	26	69	-	5
NOV	-	-	-	-	-	-	-	-	4
DEC	60	22	63	-	80	20	75	-	4
TOTAL	-	-	-	-	-	-	-	-	52
AVERAGE	129	29	78	8.7	174	20	89	20.7	4

Process Data (water)



FLOWS



FLOW DATA

Month	Total Flow (MG)	Avg. Daily Flow (MGD)	Max. Daily Flow (MG)	Min Daily Flow (MG)
January	2.42	0.08	0.10	0.06
February	2.33	0.08	0.10	0.06
March	2.40	0.08	0.09	0.06
April	2.34	0.08	0.09	0.06
May	2.39	0.08	0.11	0.06
June	2.69	0.09	0.16	0.06
July	2.36	0.08	0.14	0.01
August	1.39	0.04	0.08	0.03
September	*			
October	*			
November	*			
December	2.45	0.08	0.11	0.06
Total	*20.77	-	-	-
Average	-	*0.076	-	-

* Meter out of service September 5-November 13.

WATER QUALITY

	No. of Samples	Average	Maximum	Minimum
HARDNESS (mg/l $CaCO_3$)	3	285	294	278
ALKALINITY (mg/l $CaCO_3$)	3	198	240	126
IRON (Mg/l Fe)	3	0.10	0.16	0.05
COLOUR (Units)	3	5	5	5
CHLORIDE (mg/l Cl)	3	14	15	13

COMMENTS

The water from the Frankford well was quite hard, but was satisfactory with respect to iron, chloride, and colour characteristics.

Eighty-four coliform samples were taken during the year. None of these had a coliform count greater than 0/100 ml, indicating that the water was of excellent bacteriological quality.

CONCLUSIONS

SEWAGE

An engineering firm is presently investigating the sewage needs in the Village of Frankford as a provincial project.

WATER

The flow meter was out of service for the months of September, October and November. The value for the total flow excludes flows for these months. The value for the average flow has been prorated.

Water management in Ontario